

Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

[Vishay Semiconductor/Diodes Division](#)
[VS-VSKU71/04](#)

For any questions, you can email us directly:

sales@integrated-circuit.com



www.vishay.com

VS-VSKU71.., VS-VSKV71.. Series

Vishay Semiconductors

ADD-A-PAK Generation VII Power Modules Thyristor/Thyristor, 75 A



ADD-A-PAK



RoHS
COMPLIANT

FEATURES

- High voltage
- Industrial standard package
- Low thermal resistance
- UL approved file E78996 
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

BENEFITS

- Excellent thermal performances obtained by the usage of exposed direct bonded copper substrate
- Up to 1600 V
- High surge capability
- Easy mounting on heatsink

ELECTRICAL DESCRIPTION

These modules are intended for general purpose high voltage applications such as high voltage regulated power supplies, lighting circuits, temperature and motor speed control circuits, UPS and battery charger.

PRODUCT SUMMARY	
$I_{T(AV)}$	75 A
Type	Modules - Thyristor, Standard

MECHANICAL DESCRIPTION

The ADD-A-PAK generation VII, new generation of ADD-A-PAK module, combines the excellent thermal performances obtained by the usage of exposed direct bonded copper substrate, with advanced compact simple package solution and simplified internal structure with minimized number of interfaces.

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{T(AV)}$	85 °C	75	A
$I_{T(RMS)}$		115	
I_{TSM}	50 Hz	1300	
	60 Hz	1360	
I^2t	50 Hz	8.45	kA ² s
	60 Hz	7.68	
$I^2\sqrt{t}$		84.5	kA ² √s
V_{RRM}	Range	400 to 1600	V
T_{Stg}		-40 to 125	°C
T_J		-40 to 125	°C



www.vishay.com

VS-VSKU71.., VS-VSKV71.. Series

Vishay Semiconductors

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS					
TYPE NUMBER	VOLTAGE CODE	V _{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V _{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	V _{DRM} , MAXIMUM REPETITIVE PEAK OFF-STATE VOLTAGE, GATE OPEN CIRCUIT V	I _{RRM} , I _{DRM} AT 125 °C mA
VS-VSK.71	04	400	500	400	15
	08	800	900	800	
	12	1200	1300	1200	
	16	1600	1700	1600	

ON-STATE CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average on-state current	I _{T(AV)}	180° conduction, half sine wave, T _C = 85 °C		75	A
Maximum continuous RMS on-state current	I _{T(RMS)}	DC		115	
		T _C		80	°C
Maximum peak, one-cycle non-repetitive on-state current	I _{TSM}	t = 10 ms	No voltage reapplied	1300	A
		t = 8.3 ms	No voltage reapplied	1360	
		t = 10 ms	100 % V _{RRM} reapplied	1093	
		t = 8.3 ms	100 % V _{RRM} reapplied	1140	
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied	8.45	kA ² s
		t = 8.3 ms	No voltage reapplied	7.68	
		t = 10 ms	100 % V _{RRM} reapplied	5.97	
		t = 8.3 ms	100 % V _{RRM} reapplied	5.45	
Maximum I ² √t for fusing	I ² √t (1)	t = 0.1 ms to 10 ms, no voltage reapplied T _J = T _J maximum		84.5	kA ² √s
Maximum value of threshold voltage	V _{T(TO)} (2)	Low level (3)	T _J = T _J maximum	0.96	V
		High level (4)		1.08	
Maximum value of on-state slope resistance	r _t (2)	Low level (3)	T _J = T _J maximum	3.28	mΩ
		High level (4)		2.86	
Maximum on-state voltage drop	V _{TM}	I _{TM} = π × I _{T(AV)}	T _J = 25 °C	1.72	V
Maximum non-repetitive rate of rise of turned on current	di/dt	T _J = 25 °C, from 0.67 V _{DRM} , I _{TM} = π × I _{T(AV)} , I _g = 500 mA, t _r < 0.5 μs, t _p > 6 μs		150	A/μs
Maximum holding current	I _H	T _J = 25 °C, anode supply = 6 V, resistive load, gate open circuit		250	mA
Maximum latching current	I _L	T _J = 25 °C, anode supply = 6 V, resistive load		400	

Notes

- (1) I²t for time t_x = I²√t × √t_x
 (2) Average power = V_{T(TO)} × I_{T(AV)} + r_t × (I_{T(RMS)})²
 (3) 16.7 % × π × I_{AV} < I < π × I_{AV}
 (4) I > π × I_{AV}



www.vishay.com

VS-VSKU71.., VS-VSKV71.. Series

Vishay Semiconductors

TRIGGERING					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum peak gate power	P _{GM}			12	W
Maximum average gate power	P _{G(AV)}			3.0	
Maximum peak gate current	I _{GM}			3.0	A
Maximum peak negative gate voltage	- V _{GM}			10	V
Maximum gate voltage required to trigger	V _{GT}	T _J = - 40 °C	Anode supply = 6 V resistive load	4.0	
		T _J = 25 °C		2.5	
		T _J = 125 °C		1.7	
Maximum gate current required to trigger	I _{GT}	T _J = - 40 °C	Anode supply = 6 V resistive load	270	mA
		T _J = 25 °C		150	
		T _J = 125 °C		80	
Maximum gate voltage that will not trigger	V _{GD}	T _J = 125 °C, rated V _{DRM} applied		0.25	V
Maximum gate current that will not trigger	I _{GD}	T _J = 125 °C, rated V _{DRM} applied		6	mA

BLOCKING				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum peak reverse and off-state leakage current at V_{RRM} , V_{DRM}	I_{RRM} , I_{DRM}	$T_J = 125\text{ }^{\circ}\text{C}$, gate open circuit	15	mA
Maximum RMS insulation voltage	V_{INS}	50 Hz	3000 (1 min) 3600 (1 s)	V
Maximum critical rate of rise of off-state voltage	dV/dt	$T_J = 125\text{ }^{\circ}\text{C}$, linear to 0.67 V_{DRM}	1000	V/ μ s

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Junction operating and storage temperature range	T _J , T _{Stg}		-40 to 125	°C
Maximum internal thermal resistance, junction to case per leg	R _{thJC}	DC operation	0.29	°C/W
Typical thermal resistance, case to heatsink per module	R _{thCS}	Mounting surface flat, smooth and greased	0.1	
Mounting torque ± 10 %	to heatsink	A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow for the spread of the compound.	4	Nm
	busbar		3	
Approximate weight			75	g
			2.7	oz.
Case style		JEDEC®	AAP GEN VII (TO-240AA)	

ΔR CONDUCTION PER JUNCTION											
DEVICES	SINE HALF WAVE CONDUCTION					RECTANGULAR WAVE CONDUCTION					UNITS
	180°	120°	90°	60°	30°	180°	120°	90°	60°	30°	
VSK.71..	0.052	0.062	0.079	0.116	0.197	0.037	0.064	0.085	0.121	0.200	°C/W

Note

- Table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC



www.vishay.com

VS-VSKU71.., VS-VSKV71.. Series

Vishay Semiconductors

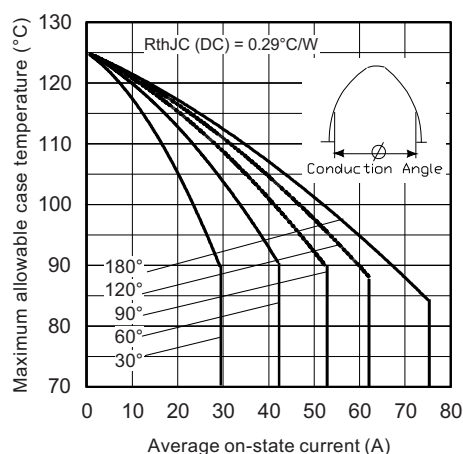


Fig. 1 - Current Ratings Characteristics

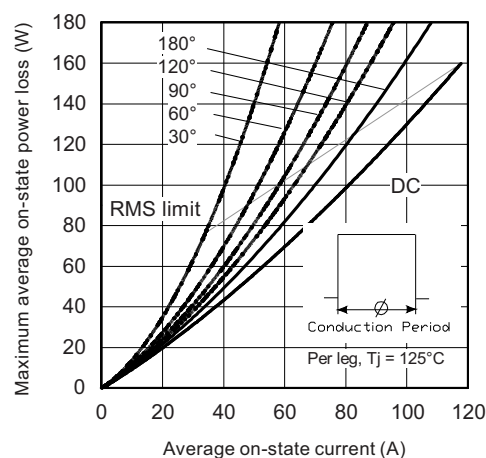


Fig. 4 - On-State Power Loss Characteristics

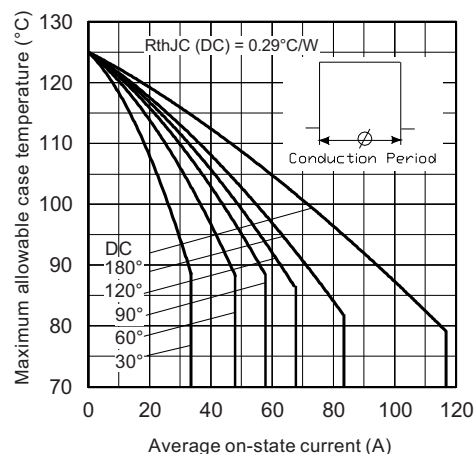


Fig. 2 - Current Ratings Characteristics

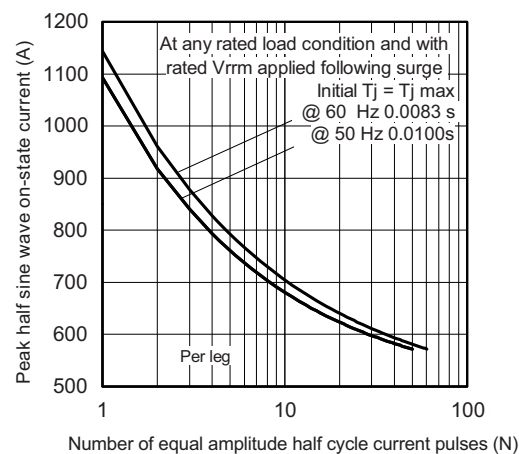


Fig. 5 - Maximum Non-Repetitive Surge Current

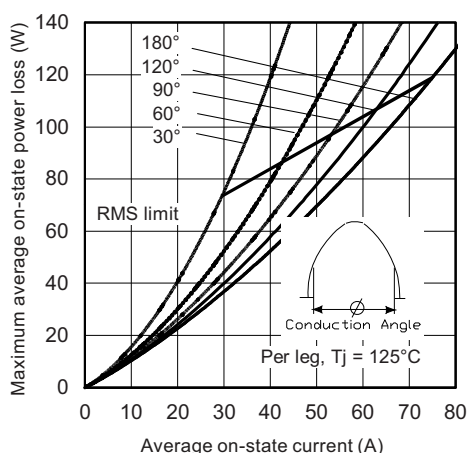


Fig. 3 - On-State Power Loss Characteristics

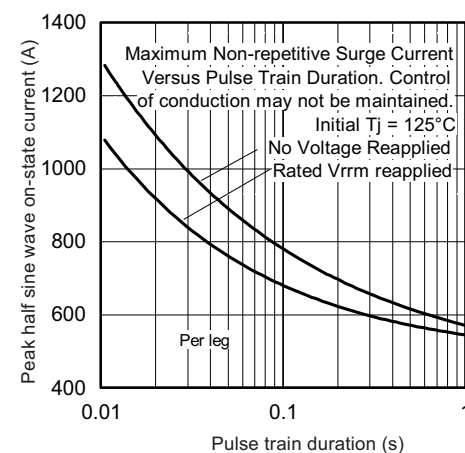


Fig. 6 - Maximum Non-Repetitive Surge Current



www.vishay.com

VS-VSKU71.., VS-VSKV71.. Series

Vishay Semiconductors

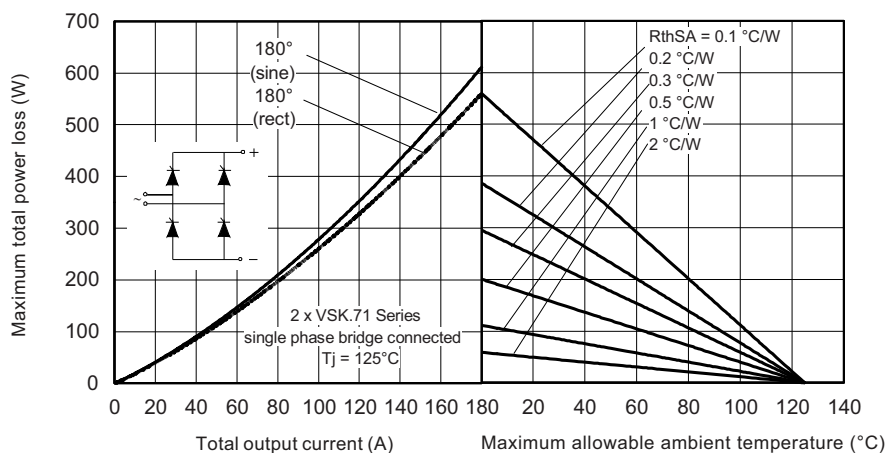


Fig. 7 - On-State Power Loss Characteristics

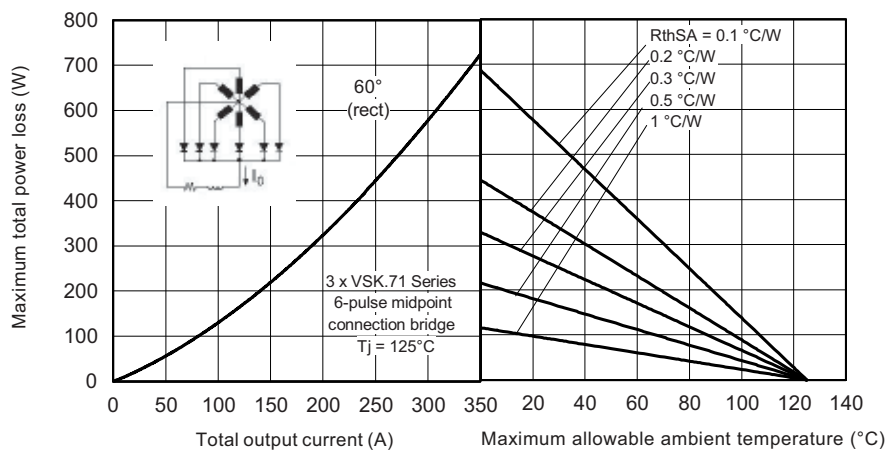


Fig. 8 - On-State Power Loss Characteristics

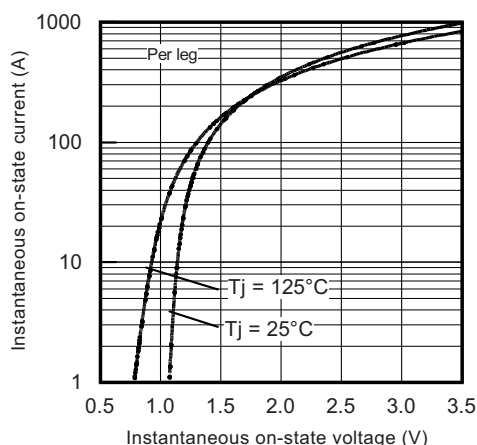


Fig. 9 - On-State Voltage Characteristics

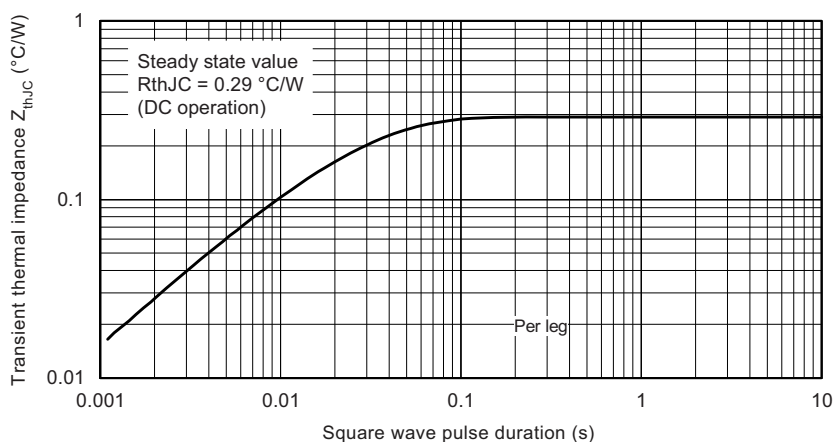


Fig. 10 - Thermal Impedance $Z_{th,JC}$ Characteristics

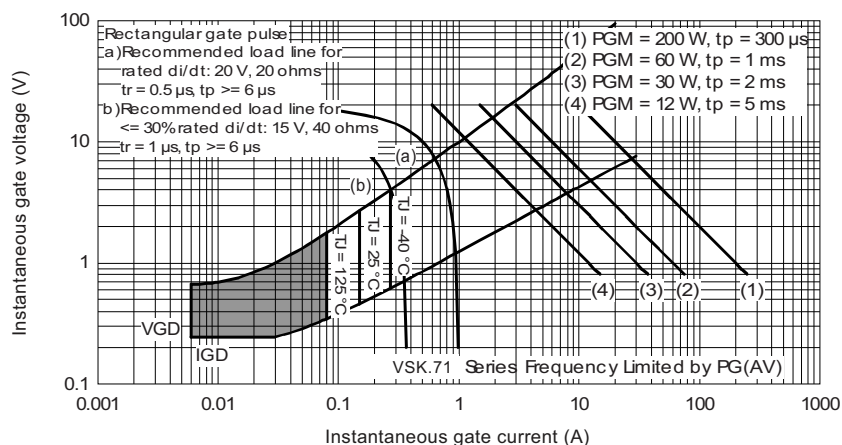


Fig. 11 - Gate Characteristics

ORDERING INFORMATION TABLE

Device code

VS-VS	K	U	71	/	16
--------------	----------	----------	-----------	----------	-----------

1 2 3 4 5

- 1** - Vishay Semiconductors product
- 2** - Module type
- 3** - Circuit configuration (see Circuit Configuration table)
- 4** - Current code (75 A)
- 5** - Voltage code (see Voltage Ratings table)

Note

- To order the optional hardware go to www.vishay.com/doc?95172



www.vishay.com

VS-VSKU71.., VS-VSKV71.. Series

Vishay Semiconductors

CIRCUIT CONFIGURATION		
CIRCUIT DESCRIPTION	CIRCUIT CONFIGURATION CODE	CIRCUIT DRAWING
Two SCRs common cathodes	U	VSKU
Two SCRs common anodes	V	VSKV
LINKS TO RELATED DOCUMENTS		
Dimensions	www.vishay.com/doc?95368	

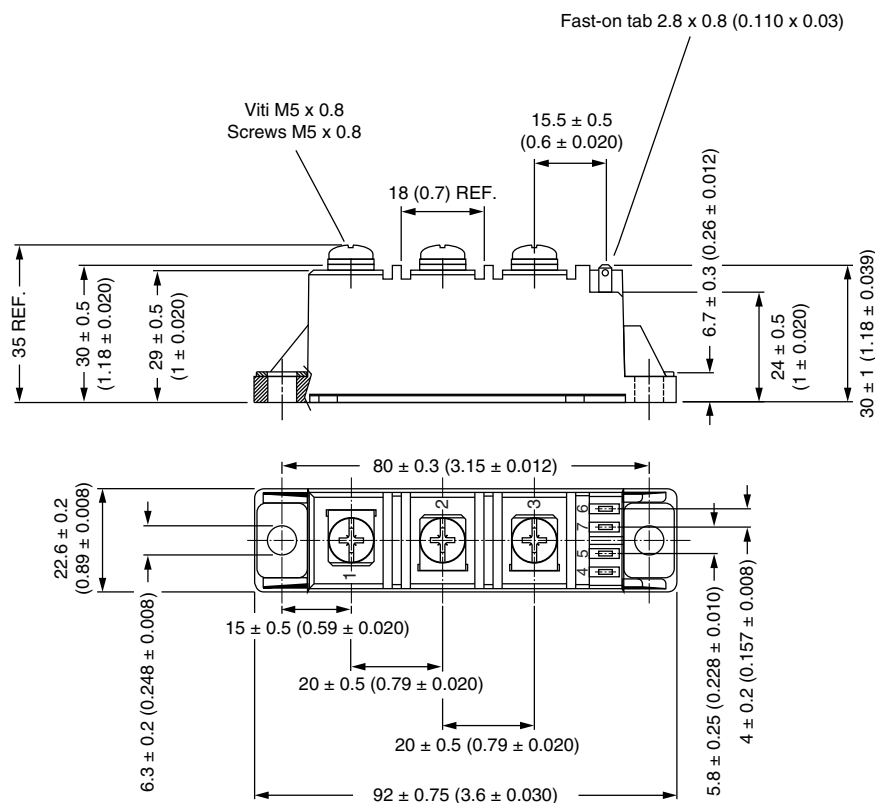


Outline Dimensions

Vishay Semiconductors

ADD-A-PAK Generation VII - Thyristor

DIMENSIONS in millimeters (inches)





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.